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On Ventilation

By J. J. R. MACLEOD, M.B., CH.B. (Aberdeen), D.P.H., (Camb.).
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INVESTIGATION of the functions of animals is essentially a more difficult problem than that of the physicist or chemist because variable and unknown factors dependent on the life process are involved. The reactions of an animal to changes in the environment are therefore not always strictly predictable, even when we consider only measurable objective phenomena. Many of the problems of physiology consist in a study of the relationship between conditions of the environment and the behaviour of isolated living tissues. These studies are entirely objective in nature. When similar studies are made on the animal as a whole, subjective phenomena also have to be considered, and the results are much less predictable.

The well-being of a conscious animal in relationship to its environment constitutes the main problem of the study of ventilation. In the case of animals living an outdoor life, it is a problem of relatively little importance, but for those like man which spend much of their time in confined spaces, it is a problem of great importance, for in them it becomes necessary to determine the limits within which the outside influences may be altered without detriment to health or comfort. It is the problem which can be solved only by an understanding of the principles of ventilation, and I propose in this lecture to indicate briefly the state of our present-day knowledge with regard to principles, and to show how this knowledge can guide us in the selection of means to improve the conditions in our living rooms and indoor public places.

It is often imagined that ventilation is a matter merely of pure air and that it therefore becomes a problem requiring attention

only in cases where the air has been polluted by the crowding together of many people. It is considered the problem of the ventilation engineer alone and not one that applies in living rooms in which there is no overcrowding. I shall endeavour to show, however, that this attitude is a wrong one, and that there is very good evidence for the belief that much discomfort and ill health could be avoided if people understood more clearly the physical conditions of the atmosphere which bear a relationship to the well-being of the body.

When our knowledge of the function of breathing became developed to the extent of showing that an animal requires the oxygen of the air for the living processes of its body, and as a result of these processes that it produces carbonic acid, which is then added to the air, it was natural to suppose that the unfavourable effect of overcrowded confined spaces was due either to the using up of the available oxygen or to a poisonous action of the carbonic acid. Indeed, it is still the notion of many people that one or other of these changes in the air is the cause of the discomfort of living in crowded places. It is true that a great deficiency of oxygen, such as occurs sometimes in mines because of oxidative processes in the soil, will very quickly cause serious symptoms, often indeed will produce a suddenly fatal result. And a lesser deficiency such as occurs in those unaccustomed to the rarefied air of high mountains, or in aeronautics, is undoubtedly responsible for most of the untoward symptoms classified under the term of mountain sickness. But that O₂ deficiency is not a usual factor in the evil effects of vitiated atmospheres is made plain when we state that even in the most overcrowded room a decrease of O₂ of one per cent.—e.g., from 21 to 20—is practically never overstepped, a decrease which, however, is very much less than that which occurs at altitudes in which, after acclimatization, people live in perfect condition. Many of our best known health resorts and sanatoria indeed are situated at altitudes in which the percentage of oxygen is greatly reduced, and there are large cities situated at altitudes of 8 or 10 thousand feet. In Potosi, a city on the high plateaux of the Andes, the percentage of oxygen calculated at sea level is not more than 12 per cent., a reduction of 9 per cent. below the normal, and yet the people of this city are well and healthy and capable of as much effort as those living at lower altitudes. "Girls dance half the night and toreadors display their skill in the bull-ring."

Clearly, therefore, oxygen deficiency has nothing to do with the evil effects of ill-ventilated places.

With regard to a deleterious effect of the accumulated CO₂, similarly negative results have been obtained. This bold statement may possibly surprise some of you, for no doubt you have known that for a great many years the contrary was believed and that the percentage of CO₂ in the air was taken as the criterion of the adequacy of ventilation. So firmly rooted indeed has this conception become that it has required considerable investigation to overthrow it. Although it has been known to physiologists and hygienists for many years that accumulation of CO₂ has nothing to do with the evil effects of polluted air, it is still believed by the laity to be the really important factor, so slowly does the work of the scientist find its application in the life of the community.

It is not altogether easy to understand why excess of CO₂ was thought to be the important factor responsible for the evil effects of vitiated atmospheres. No doubt the chief reason was that the percentage of this gas is often raised in such atmospheres, but this is nothing more than coincidence, for, on the one hand, most unsuitable conditions may exist when the percentage of CO₂ is normal, and on the other, air loaded with almost a hundred times the percentage found even in the most polluted atmosphere can be breathed for indefinite periods of time without any unfavourable symptoms.

As a matter of fact, even in the open, we are constantly taking into the air sacs of the lungs large percentages of CO₂, for obviously with each inspiration the first air to be drawn in is that which remains over in the air passage from the preceding expiration. This air contains somewhere about 5 per cent. of CO₂, and in quiet breathing it amounts in volume to about one-third of all the air that is drawn in from the outside. This alone indicates that CO₂ *per se* cannot be poisonous, and when we consider further the now well-known fact that a certain amount of this gas in the air sacs is absolutely essential to the well-being of the animal, the whole hypothesis of its toxic action becomes, to say the least of it, absurd. Indeed, so important is the presence of this constant amount of CO₂ in the alveolar air that whenever there comes to be a marked increase in the amount of CO₂ in the atmosphere, the breathing becomes greater, so as to ventilate the air sacs more thoroughly, and thus keep the relative amount of CO₂ in them at the normal level. The extent of this increase in respiration is usually so small as to be unnoticed by the individual, and certainly increased breathing is not one of the symptoms of which persons complain who are living in polluted atmospheres. Furthermore,

not only man, but other animals as well, frequently breathe by choice under conditions which cause great increase in the CO₂ content of the inspired air. "Not only the new-born babe sleeping against its mother's breast, but pigs in a sty, young rabbits, rats and mice clustered together in their nests, young chicks under the brooding hen, all alike may breathe a higher percentage than that legally allowed in spinning mills or weaving sheds." . . . "In breweries the men who tend the fermentation vats work for long hours in concentrations of CO₂ of 0.5—1 per cent. Such men are no less healthy and long lived than those engaged in other processes of the brewery trade." (Leonard Hill.)

In face of such evidence, even the most ardent supporters of the theory that the vitiated air owes its evil influence to CO₂, were compelled to abandon their position, but they did not do so without a final attempt to retain for determinations of CO₂ a certain significance in the appraisement of the healthfulness of air. Their new interpretation was to the effect that the CO₂ percentage is proportional to the amount of deleterious organic matter, and for many years this view prevailed. It is still believed by some that an increase from the normal to 10 parts of CO₂ per 10,000 parts of air indicates a degree of organic pollution which is dangerous to health. More recent work definitely shows, however, that this view also must be abandoned, and there remains for CO₂ analysis only the secondary value that it indicates, in a readily measurable way, to what extent the inside air is being mixed by ventilation with pure air from the outside. However free this dilution may be, the atmosphere may still be deleterious to health and comfort unless certain other properties of it are incidentally altered.

This interpretation of the value of CO₂ analysis naturally leads to a consideration of the next possibility, namely, that the air in confined spaces is contaminated by the accumulation of organic poisons derived from the exhaled air of the persons living in it. It is many years ago now since experiments apparently proving this hypothesis were published. These consisted in placing small animals, such as mice, in a series of glass vessels connected together in series by tubing. Air was sucked through the series so that the animal in the second vessel received air that had been polluted by the animal in the first one, and the third by the first and second, and so on. It was found that the animals in the last one or two vessels of the series died after some time, whilst the others remained perfectly healthy. The original experiments were very improperly

performed, however, and their repetition with proper care to keep down the CO_2 below a concentration which *is* fatal, such as 10 or 15 per cent., has not afforded any evidence that organic poisons were contained in the air.

Some of those who sought for evidence in support of this hypothesis, did experiments that border on the ridiculous, but yet it is important that they be referred to here, since they are sometimes quoted as being trustworthy. These experiments consisted in collecting the condensed vapours of expired air and then inoculating small animals hypodermically with some of the condensed liquid. About 1 c.c. was found to kill a mouse, and, no wonder, since this would mean an injection of something like 5 kg. into a man of average weight. Everyone knows what the injection of so much water would do. Even distilled water is highly toxic in much less amounts when it is injected subcutaneously, and when we add the fact that this condensed vapour was contaminated not only with various salts, but also with bacteria, the result on the mice becomes utterly meaningless.

During more recent years the attempt has been made to resuscitate the old hypothesis by supposing that the toxic substance is of the nature of a volatile protein. When the proteins of one animal are introduced, even in very minute quantities, into another animal in any other way than through the alimentary tract—for example, by being absorbed through the lungs—they set up in the body a peculiar condition, in which the animal becomes so very sensitive to that particular protein that when another minute quantity of it enters the body a serious poisonous reaction which is often fatal results. The phenomenon is called anaphylaxis. It was supposed that in a milder form a reaction of this type was responsible for the toxic influence of vitiated air. As proof for this hypothesis experiments were performed in which a man breathed through a filter of glass wool (to catch any saliva) into a cooled vessel, and the condensed vapour was then inoculated in appropriate dosage into guinea pigs, so as to sensitize them, and a month or so later the animals were inoculated with a minute trace of human blood serum. The injected animal showed decided symptoms of anaphylactic shock, whereas other animals not previously sensitized were unaffected by the injection of the same amount of serum. Such results taken by themselves did seem to afford substantial support for the new hypothesis, but it is almost certain that they depended on contamination of the condensed vapour by traces of saliva which it is impossible to keep out by any kind of filter. This saliva con-

tains traces of soluble protein (mucin) which had been responsible for the anaphylactic reaction. The symptoms are, however, entirely dissimilar from those of a vitiated atmosphere. Hay fever and the reaction which some persons show when near to horses may be due to anaphylaxis, but the symptoms are not at all like those of persons breathing polluted air.

Once and for all, the toxic theory, as we may call it, both in its new and its old form, is disproven by a very simple series of experiments performed a few years ago by Leonard Hill, Flack and others. These observers kept rats and guinea pigs in deep boxes so that they were huddled together in a very poorly ventilated place, the atmosphere of which indeed often contained 1 per cent. of CO₂—ten times more than the legal limit. The animals lived and thrived for months, although they must have been breathing air which was highly contaminated by the supposed volatile proteins. Not only did the animals show no symptoms while in the box, but they failed to exhibit any anaphylactic reaction when, after some time, they were inoculated subcutaneously with the serum of animals of the other species with whom they had been in cohabitation. This was really a most excellent test of the anaphylactic theory because there are probably no two animals in which anaphylaxis is more pronounced than in the rat and guinea pig. The only things that were found to be of importance in maintaining the animals in a thriving condition were cleanliness and plenty of food.

By an eliminative process we are gradually approaching the correct solution of our problem, but before we proceed to consider this, it may be well to remark that the odour of polluted air has nothing whatever to do with its unhealthy influence, except in so far as it excites disgust and puts one off his appetite. Indeed, one very soon becomes so accustomed to these odours that they fail entirely to be sensed after a short period in contact with them. Their influence is entirely psychological. In many trades and occupations people are constantly exposed to odours that are almost unbearable to one who is unused to them, and these people are perfectly healthy, and, indeed, do not complain at all of the smells.

We have so far considered in what is approximately their chronological order the various hypotheses that have been brought forward to account for the harmful influence of vitiated atmospheres. We have done this mainly in order to correct any false conclusions that may still exist in connection with the subject.

And if further evidence be demanded to justify this position there is one crucial experiment which once and for all shows that

changes in the chemical composition of the atmosphere has no relationship whatsoever to the unhealthy influence of vitiated air. This experiment is all the more convincing because it was performed on healthy young men. In its simplest form it consists in crowding as many persons as possible into an air tight cabinet, provided with an electric fan, and with the necessary apparatus for measurements of the physical and chemical condition of the air. In describing the results of this experiment, I cannot do better than quote from Leonard Hill, who, though not the first to perform the experiment, has so greatly extended our knowledge of the science of ventilation during recent years.

"After 44 minutes the dry-bulb thermometer stood at 87°F., the wet-bulb at 83°F. The carbon dioxide had risen to 5.26 per cent. The oxygen had fallen to 15.1 per cent. The discomfort felt was great; all were wet with sweat and the skin of all was flushed. The talking and laughing of the occupants had gradually become less and then ceased. On putting on the electric fans and whirling the air in the chamber the relief was immediate and very great, and this in spite of the temperature of the chamber continuing to rise. On putting off the fans the discomfort returned. The occupants cried out for the fans. No headache or after effects have followed this type of experiment which has been repeated five times." Long before the discomfort had become extreme the oxygen percentage became so low that matches would not light. The disinclination to smoke cigarettes was not noticed until some time after it was impossible to light them.

In other experiments of similar type the person in the cabinet was allowed to breathe outside air through a tube, but with no amelioration of the uncomfortable feeling, or a person outside the chamber breathed for hours the air inside it through a tube without suffering and discomfort. Clearly, therefore, neither the chemical nature of the air, nor the presence of toxic substances in it, has any relationship to its evil influence. But the experiment is not merely destructive of previously held hypotheses; it also points the way to the true solution of the problem, for it indicates that stagnation of air loaded with moisture has some very close relationship to the discomfort. It shows that a change in the physical, rather than the chemical properties of the air is the real cause of its deleterious action.

These changes can affect but one function of the body, namely, that of heat dissipation, and by so doing cause disturbances in the mechanism of heat control. This does not necessarily imply that

this disturbance is so great as actually to cause an increase in the body temperature, although this is very commonly observed in persons who have been for some time in crowded places. It indicates interference with a mechanism which is responsible not alone for proper heat regulation, but also for the maintenance of a proper relationship of blood supply to different parts of the body, and for toxic stimulation of the nervous system.

At this stage it may be well to digress for a moment to explain how the body temperature is maintained. To a certain extent the mechanism is exactly that of a radiator, the temperature of which depends, first on the rate at which the furnace is burning and second, on the cooling influence of the air in contact with the radiator. The physical properties of the air upon which the cooling depends are those which influence radiation, conduction and convection. Now, turning to the body, these processes come into play mainly at the surface of the skin, where, however, excessive loss is guarded against partly by the low conductivity for heat of the skin and of the subcutaneous tissue (fat), and partly by the fact that the blood supply to the skin is scanty compared with that of the deeper tissues. This causes the blood flowing in the skin to have a decidedly lower temperature than that in the tissues a few millimeters deeper. This relationship of superficial and deep temperatures is maintained by the action of vasomotor nerves to the blood vessels, and whenever the body is exposed to warmer air, the vessels of the skin become dilated so as to draft more blood from the deeper to the superficial vessels causing flushing of the skin. Flushing of the skin is therefore a normal reaction, but at the same time it is a warning that the heat-regulating mechanism is being put on a strain. But it is inadequate to account for all the heat loss, for man can withstand temperatures that are not greatly below those of his body, indeed, he can tolerate for some minutes temperatures that are higher. It is recorded, for example, that two observers exposed themselves for a short time in an oven in which a steak was cooking, and it is well known that certain miners work for considerable periods at very high temperatures.

Evidently some other mechanism independent of the cooling effect of air itself, and not acting in the case of a radiator, comes into play. This is evaporation, and it occurs at two places in the body; at the surface of the skin, where sweat is evaporated, and in the lungs where the expired air is saturated with water vapour. The physical factors which control the degree of heat loss by evaporation at these two places are not precisely the same. In the

case of the lungs the inspired air becomes saturated with water at body temperature, and the amount of evaporation necessary to do so depends upon the amount of water already contained in the inspired air, that is, on the absolute humidity; the lower this is, the more water will it require to effect saturation.

In the case of the evaporation of sweat, the amount of moisture vapourized from the body depends on the relative temperature and the humidity of the atmosphere.

It may be well to digress for a moment to explain what is meant by these terms relating to humidity. By absolute humidity is meant the weight of water contained in a unit volume of air. This increases greatly with the temperature of the air; thus at 70°F. one cubic foot of air contains 7.91 grs. of water. Relative humidity, on the other hand, means the degree to which the air is saturated with moisture at each temperature; thus, a relative humidity of 75 at a temperature of 70°F. means that it contains 75 per cent. of the total of 7.91 grs., which, it would contain if saturated at this temperature.

Now, inasmuch as the air after expiration is at about the same temperature as the body, and is practically saturated with moisture, it follows that the main factor influencing loss of heat by this means will be the amount of moisture actually present in the inspired air. If this be nearly at body temperature, 97°F., and dry, each 100 c.c. will take up .00413 gm. water in the lungs; if it be at average room temperature (say 68°F.) and dry, it will take up just exactly the same amount to become saturated with vapour. Some heat, it is true, will also be required in this latter case to raise the temperature of the air itself, but this is small when compared with that required to hold the water as vapour, since air warms up easily, or, to use the scientific term, has a low specific heat.

The amount of heat dissipated from the body of man by this means in an ordinary living room is about 10 per cent. of the total loss, but it becomes relatively much greater when the air is dry, and especially when the breathing is increased. On the other hand, when the humidity of the outside air is great and the temperature high, little heat loss occurs through this pathway.

Under ordinary conditions of living somewhat less heat is lost by evaporation of the sweat, and the factors which mainly determine it are the temperature and the relative humidity of the atmosphere, provided the temperature be above a certain level.

It is in connection with this phase of the subject, more than any other, that many people find it difficult to understand the true sig-

nificance of relative humidity to the well-being of the body. The difficulty depends on the fact that the relative humidity has an opposite influence at low and high temperatures. In the former case it increases the conductivity of the atmosphere for heat and has a cooling influence, and in the latter it interferes with the evaporation of sweat, and has a heating influence. Below about 65°F. the cooling effect of moist air is prominent because there is little sweating, therefore a cold, wet atmosphere is chilling—it conducts heat away. At about 70°F., the cooling effect of air disappears and sweat occurs. The evaporation of the sweat now causes cooling, the degree of which varies inversely with the relative humidity. Between these two temperatures, *i.e.*, 65 and 70, there is a range in which humidity has little influence—a neutral region. The influence of high relative humidity on bodily comfort at temperatures above the neutral temperature becomes very marked indeed at 85°F., and a relative humidity of 90%, for example, very serious symptoms appear in a few minutes, when there is no movement of the air.

Relative humidity and temperature alone are not, however, the only physical conditions to be considered. Another is the movement of the air, for even under the unfavourable conditions just cited immediate relief is afforded if an electric fan be started, as it will be recalled was the result in Hill's experiment. The temperature in the cabinet was 87°F. dry bulb, and the relative humidity very high indeed when the symptoms became serious; by turning on the fan these conditions of the atmosphere were not altered, but the students immediately felt comfortable. The movement of the air enables it, though nearly loaded to its full capacity with moisture, to carry away considerable quantities in small loads.

The wearing of clothes greatly affects the rate with which these changes occur. The clothes act as barriers preventing the movement and exchange of air around the body. The garment next the skin entraps a layer of air which is more or less at the same temperature as the skin, and which soon becomes saturated with moisture at that temperature. Between the inner garments and those over them other layers of air are entrapped, each one being at a somewhat lower temperature and containing less moisture than the one inside. These layers of air, therefore, form stepping stones as it were between the extreme conditions at the surface of the skin, and the environment of the clothed body. Obviously if the layers of air next the skin are to be renewed at such a rate that they remain cooler than the skin and unsaturated with moisture the clothing must be adjusted to suit the outside conditions.

There is every reason for believing that it is because of interference with these processes that improperly ventilated and over-crowded places are uncomfortable. The moisture exhaled and evaporated from the bodies soon raises the relative humidity so that heat loss is retarded from the skin, and the heat that is actually given off raises the temperature so that loss from the body by radiation and convection becomes suppressed. As the temperature steadily rises, the air takes up more and more moisture, with the result that less and less heat comes to be lost from the lungs in saturating the expired air with vapour. The physical conditions of the environment become unsuitable for the physiological mechanism of heat loss, although meanwhile heat production goes steadily on. The body furnaces are not damped down in proportion as the loss of heat diminishes, and the consequence is a rise in the temperature of the blood—a mild fever. Now it is well known that the cellular activities which, taken together, make up the life process of the body are extraordinarily sensitive to change of temperature; their chemical processes become changed, they demand more oxygen, they fail to get rid of effete products properly, substances which have no action on them under the ordinary conditions of temperature become toxic, and so forth. A highly abnormal internal environment therefore becomes created around the living tissues of the body.

But short of a measurable rise in the temperature, improperly ventilated places cause reactions in the human body that are responsible not only for the discomfort which is experienced, but also for a lowering of resistance to infections. These reactions are due in the first instance to alteration in the temperature differences between the skin and the underlying tissues. Normally, as has been remarked before, this difference maintains at the skin a constant stimulation of the thermic nerves, and this stimulation is important in maintaining the tone of the nerve centres. The nerve cells that control the functions of the body do not originate impulses; they only act when other afferent impulses arrive at them. There are many varieties of stimuli which may excite these afferent impulses, but none more important than those which excite the heat nerves of the skin. This stimulation depends on changes in the rate at which heat is passing through the sense organs in which these nerves terminate. It is necessary to emphasize that it is the rate of change that acts as the stimulus and this depends on changes set up between the deep and superficial temperatures. When the skin vessels become dilated so large a volume of blood reaches

the surface that this difference becomes slight and the thermic receptors are not stimulated. There are many practical applications of these principles, thus it is because of stimulation of the thermic skin nerves that cold baths have a bracing effect, that the open air treatment, as in tuberculosis, tones up the body and enables it the better to hold its own against the tubercle bacillus and that sleeping out of doors is the best tonic for maintaining good health. In open air treatment it is true that the body is closely wrapped up—that is essential—but this does not eliminate the cooling influence, for not only does the cool air play on the exposed face and hands, in the skin of both of which the thermic nerves are very sensitive, but it acts also on these nerves in the skin, under the clothes, for the clothes merely serve to regulate the rate of cooling. This still goes on very much more than it would with much less clothing in an atmosphere that is stagnant, hot and humid. Open windows in bedrooms are never so healthy as open air porches, because there is no draft. It is the draft that is important. Naturally it must be regulated so that it is not restricted to one part of the body only—that obviously would introduce conditions to which the body is unaccustomed—it must blow equally all over. There is probably no greater fallacy in popular hygiene than that drafts are dangerous. Like all good and desirable things they become so only when they are improperly used. When a person, overheated by being in a hot atmosphere, is suddenly subjected to a restricted draft of course there is danger that the sudden change of conditions, affecting one part of the body only, will cause vascular disturbances that may be undesirable, but if the conditions be properly controlled, drafts are the healthiest things and the best tonics.

This brings us to a problem in ventilation that is attracting very considerable attention at the present time, namely, the relationship between ventilation and infections. It is a common experience not only that ordinary colds, but more serious infections as well, can be directly traced to some unsuitable condition of ventilation; such as sudden exposure to a draft while overheated, or going out into a cold, damp atmosphere from an overheated room. What is the reason for the infection under these conditions? At the outset we must recognize that all these conditions, colds, catarrhs, bronchitis, just like the more acute infectious diseases like diphtheria, pneumonia, cerebro-spinal fever, etc., are due to micro organisms, and the question therefore is why should unfavourable ventilating conditions so frequently be the immediate cause of the attack.

There are two methods by which the infection might occur. First, by a great increase in the number of organisms in the air, and, secondly, by a lowering of the resistance of the body towards the organisms, which would not then require to become increased in numbers. The former method is usually known as mass infection, and there can be no doubt that it is very common, perhaps, indeed, it is the commonest cause for infection. The organisms, of course, come from infected individuals, who add them to the atmosphere in the exhaled air, particularly when this is forcibly discharged as in coughing, or sneezing, or even in speaking.

I need recite to you only a few observations to convince you of the importance of this factor. If the mouth be rinsed with a culture of some readily recognizable organism not commonly present in detectable amounts in the atmosphere, and the person, standing in front of a row of plates each containing some culture medium upon which the organism will grow, then speaks at ordinary pitch, the plates after proper incubation develop colonies of the organism, those nearest the speaker having most, but even those at a distance of several feet also showing them.

A serious problem in zoological gardens has been to keep animals that are highly susceptible to tuberculosis free from this disease. The higher apes, for example, inevitably succumb to this disease, being infected by the bacilli exhaled by persons standing in front of their cages, many of whom harbour the tubercle bacilli, though they may not show any of the symptoms of tuberculosis. Now it has been found that if glass screens are erected in front of the cages the animals remain almost free from the disease. The lesson which these and many other similar observations teach is that we should avoid as much as possible getting in the direct path of the exhaled air even of apparently normal individuals, and when an infectious disease is prevalent, it should not be considered rude in conversation to stand aside a little and even to hold the hand, or better still, a newspaper, before the mouth. This may seem impracticable advice. But why so? In the light of such convincing experiments as those which have been cited above, and they are only two in a multitude—why should people not be more careful about being infected, especially during dangerous epidemics such as that of influenza. The thing to bear in mind is that a person may be harbouring the deadly bacteria and yet be in perfect health. The bacteria that are innocuous to him may find in another person more favourable conditions for growth, and so produce the disease.

But mass infection does not suffice to explain the cause for the onset of attacks of many conditions that are nevertheless fundamentally due to bacteria, such as ordinary colds. These can frequently be traced to some chill, or wet feet, or exposure to sudden change in temperature. In such cases it is believed that the bacteria are present on the mucous membranes of the upper respiratory passages, but that they remain inactive because of the normal protective influences which exist on these surfaces. So long as the blood supply is normal, these protective influences are adequate to protect the body from invasion, but if this should become curtailed, then the bacteria become active and set up pathological processes. Evidence favouring this view has been obtained by several recent investigators by finding that the blood supply of the upper respiratory passages becomes decidedly curtailed when the surface of the body is cooled. For example, Leonard Hill and Muecke some years ago examined with a speculum the mucous membranes of the nose under various conditions, particularly out of doors, and in rooms which were ventilated and heated to an average degree. Out of doors the mucosa was pale and taut, and when touched by a probe did not show any pitting. This is the normal condition. Indoors it was common to find the membrane decidedly swollen, flushed with blood and covered with thick secretion, and when a probe was pressed on it a depression resulted lasting for some time. In one case that was frequently examined during these observations there was a deflected septum which only partly blocked the nasal passage on one side when the person was outside, but which did so completely under unfavourable conditions of ventilation. It is this swelling of the nasal mucosa and probably of that of the cavities which extend upward from it on to the forehead that causes the sense of stuffiness and probably also the headaches which are common in crowded, over-heated places.

The conditions found to bring about these changes with greatest certainty were when the feet were cold and the air round the head was warm, conditions which are just exactly the opposite of those obtaining out of doors. Here the head is usually more quickly cooled than the feet, because convection currents of cool air play around it freely, whereas next the ground the air is more stagnant. Besides, if the sun is shining, the earth becomes heated by absorbing the heat. The temperature as registered by a thermometer, either wet or dry bulb, may be the same at the feet as at the head. It is not this that counts, however; it is the rate of cooling which is dependent, mainly, on the movement of the air. Now, in a poorly

ventilated room, such, for example, as one heated by a stove, or even by radiators, and in which there is no movement of air, the feet become colder than the head, and it is under these conditions that the nasal membranes become swollen. Leonard Hill, to illustrate the importance of these principles, cites an interesting observation which he made in the House of Commons. In the main chamber "the ventilating current is driven up through the floor in such a way as to cool the members' feet, while their heads are exposed to more stagnant air. Cold feet and stuffy heads result—just the wrong conditions for legislators." The thermometer shows a uniform temperature, but the Kata thermometer, which we will describe shortly, shows the cooling rate to be 40% greater at the feet than at the head level. Hill states that he always experienced obstruction of the nose, because of his deflected septum, when he sat on the benches, and that this disappeared when the air coming through the floor was cut off and the air was introduced at the head level. The cause for these changes is not cold feet alone. It is the combination of cold feet and hot head. Out of doors, it is well known, that any one may stand with cold feet for hours without any risk of catching cold, but then the head is really cooling as fast as the feet, because of convection currents.

The ideal system of warming a room is to supply radiant heat near the floor level; open fires, properly fuelled modern gas fires, and electric heaters at floor level are the best methods to attain this. Steam heated radiators, especially if they are provided with vapourizers, are not desirable methods for heating unless the air of the room is frequently changed at high levels.

Suppose now the person subjected to conditions which cause the mucous membrane to become swollen and congested should go outside, then the membrane at once becomes pale because the blood vessels constrict, but for some time it remains swollen and boggy and continues to show pitting with a probe. It is while in this state that it offers favourable conditions for the growth of bacteria. The membrane is swollen and covered with secretion, and the blood flow is cut down. The natural defensive agencies that are normally carried by the blood do not succeed in combating the multiplication of the bacteria in the swollen membrane. After some time out of doors the blood supply returns because it is required to warm up the cool air, but this reaction does not occur before the mucosa has regained its normal condition.*

*The congestion of the mucous membrane brought about by warm, moist air, does not probably depend on dilatation of the small arteries—entailing increased flow of blood, but rather on dilatation of the capillaries, and therefore a stagnation of blood.

The protective influence of a rapid blood flow through the nasal membrane is possibly the explanation of the relative immunity from infectious colds of those who work in air containing irritating gases, such as workers in various kinds of chemical factories. Even the irritation set up by coal dust may, by similar methods, afford some protection against infection by the tubercle bacillus—for phthisis is relatively infrequent amongst coal miners. The supposedly antiseptic action of ozone is probably due to a similar irritating effect. Any benefit that may be derived from its presence in the atmosphere cannot otherwise be explained. It is possible that a useful prophylactic practice to avoid infection, such as that of influenza, would be to stimulate the nasal mucosa at intervals by snuff, but this may be an unwise suggestion.

After becoming acclimatized to outdoor conditions the nasal mucous membrane is in a much more favourable condition to withstand infection than indoors, because of the very rapid blood flow that is necessary in order to supply heat with which to warm up the inspired air. This more rapid blood flow, and the freer flow of lymph which accompanies it, is reinforced by increased secretion, which assists to wash away invading bacteria. Mass infection being equal inside and outside, the animal body can withstand it much less satisfactorily in the former case.

These observations on the reactions of the respiratory membranes to atmospheric conditions have been confirmed by other investigators. Thus Cock (H. Girard Cock, *Tr. Am. Laryngol. Rhinol. & Otol. Soc.* June, 1915) caused persons to breathe forcibly through the nostrils on to a mirror surface, and then marked on it with a wax pencil the outlines of the moisture deposited. Although the extent of the outlines varied somewhat with the depth of breathing, they afford a general estimate of the width of the air passage. It was found that there is marked reduction in the nasal air passage in a warm room. Winslow (Winslow, C.E.A., *New York Commission on Ventilation*) also sums up the observations (150 in number) made on this aspect of the problem, in the following words: "Ordinarily it was found that heat causes a swelling of the inferior turbinate of the nose, tending to diminish the size of the breathing space, increased secretion and reddening of the membranes. The action of cold is, as a rule, just the opposite."

Many other observations bearing on the relationship between chilling and immunity to infection have been recorded, but it would take us beyond our subject to discuss them here. Because of their accuracy and the excellent control of possib'e fallacies it is import-

ant, however, to say something about the recent investigations of Mudd and Grant (Mudd, S. and Grant, S. B. *The Journ. of Medical Research*, XL., p. 53, 1919). These observers measured the temperature of the mucous membranes of the palate, tonsils and pharynx by means of thermo-couples before and during application to the skin of cold towels, or while cold air from a fan was allowed to play on it. A rise in temperature would indicate that the part had become more vascular, and a fall, the contrary. That this interpretation was the correct one was confirmed by direct inspection of the degree of flushing (redness). It was found that chilling the body surface immediately caused a fall in the temperature of the mucous membranes which could not be accounted for by any accompanying change in blood pressure, or, entirely at least, by changes in respiration or by lowering of the temperature of the blood. The conclusions are "that chilling of the body surface causes reflex vaso-constriction and ischaemia in the mucous membranes of the palate, faucial tonsils, oropharynx and nasopharynx."

And now the final question presents itself, what are the ideal conditions of ventilation? It is a most difficult question to answer, and one over which at present several large commissions are at work. Indeed, most elaborate experiments have been planned and undertaken to throw light on the question. The observations of the New York Commission on Ventilation, by Mr. Watt, in the Graham School in Chicago, are among the most important in this country, and, of course, they interest us much more directly than those conducted on the other side, where the climatic conditions are fundamentally different.

The observations have been made very largely on properly selected groups of school children, taught in class-rooms with different ventilating conditions. Attention is directed to the general efficiency of the pupils and the condition of their health. The temperature, and the humidity of the air are the physical conditions of the atmosphere which have been more particularly studied, but a great deal more work must be done before any definite conclusions can be offered. It appears, however, that for schoolroom air a temperature of 65-68°F., with a relative humidity of 45-60% is the optimum. To maintain these conditions throughout the period a class occupies the room, usually requires, in this country at least, the addition of a considerable quantity of moisture to the ventilating air. The air of most of our school rooms in winter errs on the side of being too dry, for under these conditions the mucous mem-

branes suffer injuriously. An excellent summary of the various authoritative conclusions with regard to the optimum conditions of ventilation for class-rooms is given by Burnham in the *Pedagogical Seminary* (Burnham, W. H., *The Pedagogical Seminary*, 1919, XXVI., p. 311).

Although the present review does not venture to discuss the methods that are employed for the measurement of the various physical properties which have to be considered in gauging its influence on health, nor the engineering problem of how ideal conditions may be maintained, it may not be out of place to mention, in connection with the former of these, that the physical property to which most attention should be devoted is the cooling power. This cannot be done by reading an ordinary thermometer, for this instrument only registers the temperature of the piece of wood and of the wall against which it is hung. It registers the same whether the air is dry or moist, or whether it is stagnant or moving. Some-what more information regarding cooling power is afforded by readings of a wet-bulb thermometer, an instrument in which the bulb is kept constantly moist, so that evaporation occurs from it. This evaporation tends to cool the thermometer, in proportion to its rate, and since this is dependent mainly on the degree to which the air can take up more moisture, we can tell by the use of a formula or tables the relative degree of humidity of the air. Still this does not tell us the real degree of cooling which the atmosphere can bring about. It does not adequately register the cooling which is dependent upon movement in the air, the so-called convection currents. To afford this information Leonard Hill has invented what he calls the Kata thermometer, by which the rate of cooling is directly measured. The instrument consists of an alcohol thermometer with a relatively large bulb, and with the scale registering between 105°F. and 90°F. It is placed in warm water at about the former temperature, and is then removed, and the time required for the temperature to fall from 100°F. to 95°F. is measured by means of a stop watch. This time divided by a factor determined for each instrument, and written on the stem, gives the actual amount of heat in millicalories per square centimetre per second which would be given off from, say, the surface of the human body, under similar environmental conditions. Hill and his associates have shown that much important information concerning the cooling power of the atmosphere can be gained in this way, which cannot be gained by any other.

“Recreation as a Public Health Measure”

BY A. B. DAWSON, B.P.E.,
Physical Director, Y. M. C. A., Halifax, N.S.

Association of Medical Health Officers of Nova Scotia, July 1, 1919:

In the subject assigned to me for discussion this evening there appears to be dual possibilities—on the one hand, that the title contains a challenge and that an attempt should be made to advance proof for the bold inference that Recreation is a Public Health Measure. On the other hand, I might overlook such an inference and simply endeavour to relate or review some of the outstanding phases of Public Recreation and Physical Education which have been conceived or revived in modern times with a view of contributing to that great objective—The Public Health.

Surely in such a gathering as this, in the presence of the Medical Health Officers of this fair province, the first proposition would be entirely unnecessary: indeed, an unpardonable waste of time.

Instead of quoting lengthy statistics, prominent authorities, and outstanding statesmen or advancing convincing arguments to establish the premise, I shall simply and arbitrarily consider the statement that Recreation is a Public Health Measure in the light of a truism.

New Pronunciation, with New Emphasis.—The word Recreation is not a new one, though it has recently taken on a new pronunciation, in professional circles at least. This new pronunciation is, I believe, indicative of a larger conception and a fuller appreciation of the physiological fact implied “re-creation.” Not so many years ago, when we said recreation, referring perhaps to athletic contests where supervision or control was lacking, “wrecks” were, I sadly fear, too often the result, and the old pronunciation was therefore quite fitting, indeed prophetic. With the newer emphasis on *leadership* and *supervision*, has come the change.

Instinct for Play.—Recreation for the people is a vital problem for every city, every town, and, indeed, every community. The instinct for play is universal. This instinct may and should be made a mighty force in producing *physical fitness*, in *advancing education* and in *stimulating national life*.

A soldier, an original of the 1st Canadian Division of the C. E. F., who returned to Canada a few weeks ago, in a conversation that I had with him advanced this idea. The government, by legislative act, has closed the saloons—which he approved—but, he argued, it has not provided a substitute. It is the duty of the government to provide a social centre to take its place and the best substitute is the supervised and equipped playground and the community centre. That seems fair and right, and I confess I had no argument.

Man Power and Woman Power.—But—speaking about soldiers—shall we forget the experiences and the lesson of the last five years? What a shock it was to England, France, Belgium, Italy, Canada, and later to the United States, when the youth of these nations was being counted with feverish anxiety. Upwards of thirty per cent. physically unfit. A revelation which might well make these nations look back with shame on the neglect of their youth in the days of peace.

Now, the strain on our human resources is over. Only three days ago the Peace Treaty was signed. That insistent and terrifying demand for men, sound men, men physically and physiologically fit, is gone. But will we forget? Will England, France, Belgium, Italy, the United States, and Canada forget? May it be said that the war being over we are no longer nationally concerned with our youths? Will it be true that these human resources are precious only for the purpose of war? The preparation of youth for the battles of maturity is surely as important for peace as it was for war. The need for vigorous, healthy, and long-lived men and women is certainly as important for to-morrow as it was for yesterday.

If thirty per cent. of the young men between the ages of twenty-one and thirty were unfit for military service they were equally unfit to render full measure of service in any capacity; therefore, unable to get full returns from life in work and happiness. It is quite fair to suppose that a similar percentage of women similarly suffer from disqualifying defects.

What about the boys and girls of school age in Nova Scotia—children six to eighteen years now marching along the great highway of youth. Can it be said of them, as it is of the children in some of the States, that at least fifty per cent. of these have defects and ailments that impede normal development in greater or less degree; that they live, at home and at school, in conditions more or less unhygienic; that they lack that positive physical education—

play, athletics, gymnastics, work—necessary to realize their potential man and woman power.

Physical Education Legislation.—England, appreciating a deplorable physical condition of her youth, has included in her plans for reorganization of her educational system extensive provision for compulsory physical education.

In France there has recently been appointed, under government direction, a National Committee for the development of Physical Education.

In the United States, State and Federal legislation is being secured in a coast to coast campaign for National Physical Fitness. This legislation interprets physical education in a broad and true way, as understood by the most competent experts in school administration and in physical education. It assumes physical activity as the basic thing, but conditioned upon, and integrally related with, wholesome physical environment, individual examination and record, development of health habits and instruction in health knowledge, hygienic school management and co-operation with all agencies that make for physical upbuilding and the moral growth inevitably incident to sane, wholesome, active, physical life.

This legislation provides for boys and girls alike, recognizing that the physical upbuilding of women is equally important with that of men.

In a letter received three months ago from Mr. E. Dana Caulkins, manager of the Physical Education Service, Washington, D.C. (which is conducted by the Playground and Recreation Association of America), I learned that twelve States had already enacted physical education laws, namely, New York, New Jersey, Illinois, Rhode Island, Nevada, Maryland, Delaware, California, Washington, Oregon, Utah, and Montana. At that time, in the following eleven States, physical education bills had been introduced, with fair prospects of passage: Indiana, Oklahoma, North Carolina, Tennessee, Kansas, Missouri, Colorado, Michigan, Maine, Massachusetts, Pennsylvania. These laws provide for the levying of taxes and the preparation of teachers for the carrying out of a thorough and effective system of physical education. The programme and syllabus now operating in the State of New York, for example, requires six hours a week in physical training from every pupil who comes under the provision of the law—that is, all the children, male and female, above the ages of eight years, in all elementary and secondary schools, and in all private schools. The number of hours required varies in the different States.

I am stating these facts with a distinct purpose. I am a Canadian. Prouder to-day in the knowledge of that fact than in all my possessions. But I do not like to see Canada in any other than first place in any race. The race in re-organization and reconstruction is on among the nations. We see England—the United States—France—adopting as a primary need compulsory physical education programmes. But where is Canada in the race? When the starting gun was fired and the Great War was on (and seemingly the only thing that mattered) Canada was away in the first heat. She won everlasting distinction and honours; for who can escape that thrill of pride when we think of the Canadians being picked by that peerless Marshal as the storm troops of the Allies in that last great advance! Think of the training and conditioning of these men: the physical training syllabus (not always enjoyed by the men, it is true, because of the prosy and perfunctory methods employed) the bayonet fighting and the whole routine of vigorous out-door experience—what a change was effected. This same development in physical strength, co-ordination, control, and will-to-do must result from any properly prescribable system of physical education, whether for children or adults. But why wait for an alarming emergency—yes, why? May I make bold to suggest that among the many important and timely resolutions which you may pass in this conference that one, recommending the enactment of provincial and federal legislation for the purpose of providing sane, compulsory physical education in Canada, be among them.

Play.—But after school hours and after work, there are still many hours of leisure. Roughly, the day, for most people, is divided into three periods of eight hours each—eight for sleep, eight for work and eight for leisure. The way that the individual spends that leisure time is of vital importance both to him or herself and to the state. The play instinct has been referred to as universal. Most people would play if they had the opportunity. There is little to do now in the larger centres but seek amusement. Amusement and play must not be confused. Play is essentially educational, and recreative, and, when wisely supervised and directed, must surely be physically beneficial and uplifting morally. *Amusement* may be made educational, but frequently is not. Play is the chief desire of childhood and youth. A child deprived of play loses one of the greatest factors in its education, and it is doubtful if it can develop normally.

Playground Movement.—The recognition by psychologists and

educators of the immense importance of the play instinct has led in comparatively recent years to a marvellous growth in what is called the *playground movement*.

Particularly in cities, and especially in the largest cities the modern playground is as essential as the school, the church, or—if you will pardon me—the medical health board.

Usually municipally owned and controlled, sometimes, where the municipality has not caught the importance, privately owned, or as is the case in Halifax, partly municipally and partly privately supported, these playgrounds are a very Godsend to thousands upon thousands of the children and youths of these communities. They are veritable bee-hives of activity and the product turned out is undeniably a better, healthier, happier citizenship.

A Modern Playground.—Picture to yourself this scene on the old dumping ground in Halifax, known as the Central Common—now the Central Playground. It's a hot afternoon in July, the shadeless streets in the poorer sections of the city are deserted. The erstwhile dump is swarming with young life. There are eight small punts carrying four to six precious kiddies plying on the old willow-lined Egg Pond. A lady teacher is directing their movements and the crews are changed at intervals. Scores of youngsters, knickers and skirts rolled well up are wading barefoot about the edges of the pond, and sailing boats. There are nine baby hammocks hung on frames in sets of three each holding a tiny baby, fast asleep in the shade of the willows, mother or sister keeping watch near by. There are twelve box chair swings for the toddlers, each full and other waiting their turn. Two metal slides have a never-ending stream of coasters. Eight see-saws are never at rest. Twenty-seven full-length swings of steel construction are in constant demand by the older boys and girls. Two teeter-ladders are tilting at full speed and bidding farewell to the possibility of round shoulders, as are the glorious giant strides that are whirling around next to them. The sand boxes are alive with three to six-year-olds building all the wonderful things that imagination can devise. The older boys are practicing on the horizontal bars, the parallel bars, travelling on the rings or the horizontal ladder, vaulting over the horse or the buck. Older girls are playing at either tennis, newcomb, baseball, basketball, or engaging in some rollicking, boisterous group game. Baseball and basketball and volleyball each has claimed the favour of a group of boys on their respective courts. And all this going on harmoniously, because of

supervision. A teacher here and there is directing things. Older girls and boys who are acting as leaders are faithful in their duties —and it's free!

Four other playgrounds in the city are carrying on a similar programme, only on a smaller scale, because of inadequate space. Now, the question is, why is this not municipally supported in Halifax? Why is it that supervised playgrounds are not found in every town and village in the Province? Aside from any health consideration, the playground is the most democratic institution on this continent. If the Great War was fought to make the world safe for Democracy—why do we delay in adopting this widely proven and universally approved method of developing it.

Recreation Facts.—Just a few statistics—Recreation facts—from the last year book or annual report of the Playground and Recreation Association of America:

403 cities in the United States and Canada last year maintained 3,871 playgrounds and neighbourhood centres under leadership.

30 cities initiated an organized programme in 1918.

8,137 paid workers directed the recreational activities of America's children and adults.

787 playgrounds and recreation centres were open during the entire year.

In greater numbers than ever before working boys, girls, and adults attended evening recreation centres. A total expenditure of \$4,891,606.00 was reported by 380 cities—of this total \$2,306,500.91 was expended in 348 cities for salaries.

In any consideration of the playground movement it must ever be remembered that the play leader or director is of far more consequence in the securing of results than is the equipment.

Economical Side.—While we are discussing recreation from a health standpoint, there is a very interesting argument advanced on the *economical* side which I will only suggest.

The migration from Nova Scotia to New England and to Western Canada, which has been going on for years, is taking from this province much of its most potential resources in brain and brawn. Many of these Nova Scotians are making names for themselves in other places. Must this province go on indefinitely contributing to the upbuilding of other cities, or can we do something through the developing of the play life of the province to hold the interest of these young people and secure for them the degree of happiness which they desire. The State of Maine made a similar discovery

and has recently applied this remedy. The results will be interesting.

Recreation for Adults.—Recreation for the adult is quite as important as for the child or youth. Skating, skiing, snow-shoeing, tobogganing, curling, hockey, canoeing, swimming, diving, water polo, track and field sports, tennis, golf, rugby, soccer, baseball, lacrosse, field hockey, basketball, volleyball, handball, bowling, boxing, wrestling, fencing, mountain-climbing, etc., all have their own peculiar appeal, and if indulged in sanely must surely have a beneficial result. Excess in any may bring disaster. The great difficulty about most of these avenues of recreation has been that they have been out of the reach of the ordinary young men and women. That condition is changing. Play and recreation must be a possibility for all. There should be no place for the aristocratic athletic club in our newer democracy. A regrettable feature in modern recreation is the creation of the high class spectacle and the resulting development of the professional athlete. The public is undoubtedly to blame for this. Play has frequently lapsed into unwholesome amusement and instead of benefit comes the reverse.

Happiness is what we all seek. Health—abundant health is a primary requisite. It cannot be purchased for money. It is not put up in bottles.

Recreation is undoubtedly the antidote to old age—a man, especially, is as old as he feels, and the way to feel young is to recreate.

The Mentally Deficient in Ontario

MR. JUSTICE HODGINS' RECOMMENDATIONS.

THE PUBLIC HEALTH JOURNAL has received a copy of the Report on the Care and Control of the Mentally Deficient and Feeble-minded in Ontario, by the Hon. Mr. Justice F. E. Hodgins, Commissioner appointed by the Ontario Government. This valuable report, which has just been issued in printed form, deals with the subject in a most exhaustive manner, and the information which it contains should prove of great assistance in solving a most acute problem. The general recommendations made by the Commissioner are published for the benefit of our readers.—ED.

RECOMMENDATIONS.

In making recommendations for the practical application to the conditions of our Province of the foregoing conclusions and the various considerations which have been presenting themselves in this report, I am desirous of suggesting what can be accomplished without casting an undue burden upon the finances of the Province or on its municipalities. At the same time a well-defined objective and the means necessary to reach it are indispensable.

If the matters elaborated in the report are treated as indicating the general line to be followed in dealing with a most important social reform, it will be apparent therefrom that the information and education of the public are indispensable to the ultimate success of whatever plans are finally adopted. Such plans, which must necessarily represent a continuous and combined effort, must in some parts provide for future developments, but this does not in any way prevent the immediate adoption of measures which will in themselves ameliorate present conditions and also help greatly in any scheme of public propaganda. My recommendations will therefore deal with organization, education, plant and equipment and revision of existing laws, and will include suggestions for handling the problem in its practical aspect.

I have therefore the honour to recommend:

1. A systematic detailed survey with proper professional assistance and opportunity for the study of individual cases; a plan of registration covering the Province by which the mentally defective

will be identified and classified; the adoption of a plan for educating, assisting and supervising those who are shown by this survey to be in need of help through institutional care or by trained supervisors, probation officers or social workers; and the detention in permanent homes or refuges, preferably of the colony type, of mentally defective women who are of child-bearing age, and for the segregation in institutions and colonies of both male and female feeble-minded delinquents whose anti-social qualities or criminal tendencies show a necessity for permanent restraint. The survey should proceed first through existing agencies, such as the Children's Aid Societies, Juvenile Courts and the public schools, and should be conducted in the light of the three leading ideas which I have already stated, namely, (1) that early diagnosis will enable care to be bestowed where it is most likely to do good and will enable classification to be begun; (2) that those then diagnosed as morons, whose disability declares itself later, and whose potentialities for evil are great, may, if trained in their early years be deflected from crime and made comparatively useful members of society and (3) that the results to the community of survey, care and supervision will be found to be exactly in the same ratio as are the excellence or carelessness bestowed upon these efforts. In other words, the community will only get, in this particular, exactly what it pays for.

Registration is probably only needed in case of those who are designated, as feeble-minded according to the following definitions:

"Feeble-minded persons—that is to say, persons in whose case there exists from birth or from an early age mental defectiveness not amounting to imbecility, yet so pronounced that they require care, supervision, and control, for their own protection or for the protection of others, or, in the case of children, that they by reason of such defectiveness appear to be permanently incapable of receiving proper benefit from the instruction in ordinary schools.

"Moral imbeciles—that is to say, persons who from an early age display permanent mental defect coupled with strong vicious or criminal propensities on which punishment has had little or no deterrent effect."

Those who are idiots or imbeciles are easily and generally taken care of and are usually unlikely to marry. The survey can be gradually extended when the urgently-needed work already outlined has been got in hand.

The confinement of those needing detention on account of anti-social qualities should proceed upon the principle of finding con-

tinuous work under proper conditions, the females in institutions where they can be educated to engage in such work as is suitable for them, and the males in colonies where out-door work can predominate and where they can be trained in manual labour in farming, reforestation, breaking and clearing land, building roads, erecting buildings and in other forms of activity.

2. The formation of a Board of Control or of a Departmental Committee, under the control of the Provincial Secretary, and under the chairmanship, if possible, of some energetic, well-known and philanthropic citizen, and with an executive and paid secretary of known experience, who should be appointed an official of the Provincial Secretary's Department. Such a Board or Committee should include in its personnel individuals selected from organizations such as the Children's Aid Societies, the Canadian National Committee on Mental Hygiene and the Provincial Association for the Care of the Feeble-minded, and other kindred bodies engaged in social welfare work; from the hospital staffs or physicians already interested in psychiatric work; from the medical health officers of municipalities and from probation officers, together with at least one member who has had practical experience in the care of the feeble-minded. Provision should also be made for the presence on it of some public-spirited men whose experience and interest would be of great value in stimulating public opinion.

This Board or Committee should elaborate a proper scheme of survey and registration and also provide for the important subjects of early diagnosis and of paid expert study and supervision as well as for the extremely important duty of co-ordinating and profiting by the work of all social agencies and workers who come into contact with feeble-mindedness.

The co-operation of the judges and the legal profession, as well as that of municipal officials, should be solicited to aid in the remodelling of our statute laws and legal procedure which at present require renovation in so far as they bear upon this subject. I look with confidence to some aid from both the Bench and Bar and from the municipalities in this department of activity, and I am sure it can be procured if the subject is properly placed before their associations as well as before individual members of the Bench and Bar and of the Municipal Service.

The size and constitution of this Board or Committee will be indicated by the scope of its work and purpose when these are determined. It should undertake to issue what literature is neces-

sary and look after and initiate such propaganda as may be decided upon. In the projected survey care should be taken to include the examination and classification of all confined in penal institutions or asylums or resident in refuges or other similar establishments in which the feeble-minded are usually to be found, and of all school children.

I further recommend the appointment at once of an Inspector for Mental Defectives or for the Feeble-minded, who should be regarded as an independent officer in the Provincial Secretary's Department.

3. The erection of a properly equipped Psychopathic Hospital in Toronto, to be followed by others in suitable centres. This hospital should be arranged and maintained so that it will provide for the examination and study of all suspected mental cases before their ultimate destination is finally determined, and should afford facilities for clinical instruction and psychiatric research as well as for the training of special hospital nurses. To that end it should be provided with proper equipment and with a competent staff of psychiatric and psychological experts. Its location should be near one of the larger hospitals, the use of whose equipment might save much expense. This should be preceded or supplemented by the immediate erection of a new and up-to-date Reception Hospital in the city of Toronto for the reception and temporary care and study of all suspected or acute cases of mental trouble, and should contain provision for the seclusion and treatment of cases which may by that means be saved from developing into chronic insane patients. Nothing is to be gained by putting up or providing a mere temporary shelter for mental cases in some old house, unless they can obtain proper care in the incipient and early stages of mental disturbance.

4. The enlargement of the scheme of Juvenile Courts so that they will be opened in various centres in the Province and will, as soon as can be arranged, be provided with similar scientific assistance by psychiatric and psychological experts whose services will be recognized as open to all judges and magistrates dealing with criminal cases. The proper co-ordination of these important agencies with the work of the Children's Aid Societies is most important, and the latter should be provided with Detention Homes whose immediate and proper establishment should be insisted on with due regard to their purpose as something better than mere lodging-houses for delinquent children. I refer to the need of study and

consideration for those cases who prove mentally defective or, if normal, need help and the securing of proper environment. Also the laying down of a proper standard of securing of building and equipment for Juvenile Courts with reasonable facilities and accommodation for the necessary help rendered by outside voluntary bodies and persons, both in the court work and in the supervision needed pending disposition of the cases as well as the more intensive work done afterwards by probation officers, trained supervisors and social workers. Provision should also be made for psychiatrists as an integral part of the staff.

5. The opening of a parent institution similar to that at Orillia in the northern part of the Province to which the colony system as outlined in this report can be applied in due course, and the extension of the colony system in connection with the Orillia Institute. These should be equipped with mechanical facilities for the various kinds of industrial work and manual labour as indicated in this report, and there should be a distinct advance projected in the direction of providing a proper outlet for what is produced in the supplying of all similar institutions and of others which receive Government aid. The enlargement of the scope and outlook of industrial work and manual labour at the Orillia Institute is urgently called for, if it is to be the industrial centre of the work, and also the acquisition of more farm land and more scientific equipment for larger schemes of productive work, such as poultry farming, a canning factory, scientific fruit farming, etc. Reforestation colonies should form a feature in the new advance. The proposed colony farms to be established by the city of Toronto, as set forth in this report, should be encouraged as forming a useful outlet for mentally defective children found in Toronto and not otherwise provided for.

6. More adequate provision for the permanent segregation of feeble-minded women of child-bearing age by providing, either through the enlargement or the increasing of present facilities, of suitable places for detention and also amplifying their training in useful pursuits. The survey of the present refuges, particularly in cities and towns, should be made with a view to their removal to proper and suitable locations, and the provision for more adequate buildings. Many of them are wrongly placed and poorly constructed, and have made no provision for the education of their inmates or their proper training in industrial work. Consideration should be given to the practicability of establishing laundry

colonies near large cities and towns and also town colonies similar to those planted by Dr. Bernstein in Rome, N.Y., particulars of which will be found in the report.

7. The amendment of the present legislation, both Federal and Provincial, in the direction set forth in this report with regard to Juvenile Courts and increasing their jurisdiction up to the age of 21 and in other ways so as to provide for such powers as are necessary to carry out any system of probation or supervision which may be adopted and to enable the judges of those courts to deal with their cases unhampered by provisions as to remand and custody at present only properly applicable to the ordinary criminal courts. The enactment of a simple and uniform procedure dealing with admission to and discharge from public institutions and private homes and the establishment of a proper system of transfer of the mentally defective from institutions in which they ought not to remain. The particulars of the provisions here referred to will be found in this report under the section dealing with legislation, where many anomalies are referred to and where the procedure advocated is set forth in some detail.

8. The compulsory establishment by Boards of Education and School Trustees of special training classes for mental defectives as part of the Provincial scheme of education and provision for the training of teachers so as to specially equip them for this work. These special classes should be so organized and managed as to provide an opportunity for the proper study of the pupils in them with a view to their ultimate destination. It should be obligatory upon parents to permit their children to attend these classes where so required by the school authorities. No child designated as needing special instruction in these classes should be permitted to remain in an ordinary class.

9. Recognition of the need of skilled medical advice in regard to mental defectiveness in dealing with all criminal cases and the establishment of proper clinics attached to or available for the courts administering criminal justice.

10. The establishment of suitable mental clinics each with a competent physician and social worker by municipalities in which there are hospitals and proper financial assistance and aid by the Province in this regard on the lines set forth in my second interim report dealing with venereal diseases and the enactment of such regulations or statutory provisions as will require municipalities to

establish them where deemed necessary by the Provincial Secretary.

11. Prompt dealing with degenerate settlements or vicious centres developing feeble-mindedness, by the immediate segregation of the females of child-bearing age, the removal of those families who give promise of improvement to other sections of the Province and their establishment there under conditions of help and encouragement.

12. Amendment of the Municipal Act, the Juvenile Courts Act and the Children's Protection Act, so as to give the Lieutenant-Governor-in-Council greater powers in relation to such municipal duties as are or may be imposed on municipalities in regard to provisions for mental defectives.

The respective duties of and contribution from the Provincial and municipal authorities should be clearly laid down upon the lines indicated in the section of the report dealing with this branch of the subject. Those duties so far as they affect municipal bodies might well be modelled upon the Mental Deficiency Act, 1913, with due regard to the difference between the municipal systems existing there and in this Province. The powers of the local agencies constituted under the three Acts I have referred to should be assimilated to those of the Boards of Education with regard to financial provision for their work and its maintenance and upkeep. By this I mean that a requisition from these agencies for buildings, equipment and up-keep should be treated on much the same principle as are the requisitions of the Boards in school matters. That is to say, that the moneys required for salaries and maintenance should not be subject to refusal by the municipality. If, however, the municipality so desires, the matter should be referred to the Lieutenant-Governor-in-Council who should determine the amount to be provided. As to expenditure for permanent buildings and their equipment the same rule should be followed, with the right of the Lieutenant-Governor-in-Council, on being applied to, to fix the sum required for the proposed work. In this way the Provincial Government will be in a position to see that proper needs are promptly provided for and will also in the end be responsible for the standard of progress adopted.

Authority to raise the moneys required for these purposes by rates in default of proper provision by the municipalities should be provided for.

13. The making of urgent representations to the Dominion Government to strictly enforce rigid mental tests of all intending immigrants and to reject and deport those likely to develop anti-social qualities or criminal tendencies, or to become a burden on the community, and also to provide the plant and equipment necessary for adequate examination as well as professional medical assistance by those competent to pronounce on mental deficiency.

14. The enactment by the Dominion and Provincial Parliaments of concurrent legislation prohibiting the marriage of mentally defective or feeble-minded persons who have been identified and registered under the system of survey, and the requirement, in all such cases, of a certificate from proper medical and departmental authority before the ceremony of marriage can be legally performed. Also, if considered desirable, legislation imposing imprisonment for a reasonable period upon anyone who knowingly and wilfully marries or has carnal connection with a person who is mentally defective so as to prevent, during the term of imprisonment, their further procreation of children who may be feeble-minded.

15. The definition of mental defectives as given in the Mental Deficiency Act, 1913, might well be adopted in this Province as properly descriptive of those intended to be affected by any proposed action, and the divisions into classes as given in that Act should be followed in order to avoid confusion in legislation.

16. Provision should be made for licensing for limited periods and for inspecting private homes for mental defectives where they might be received and cared for. The terms of such license and the necessary provisions for proper and personal inspection are dealt with in this report.

17. There should be accommodation provided, either in existing orphanages, private homes or in special wards or pavilions in the Orillia or other institute for the reception and care of infant idiots and imbeciles. Such provision to be carefully safeguarded as to license and inspection in the case of orphanages or private homes proposing to take advantage of this provision.

18. Periodical inspection of all institutions, homes or colonies in which mental defectives are received or detained should be made by medical men specially qualified to deal with mental deficiency and not merely by registered practitioners who are not so qualified.

This should also be insisted on in all cases of either voluntary or judicial commitment, discharge or transfer where medical certificates are part of the material upon which action is being taken.

19. The education of more medical students in psychiatry and psychopathy is a pressing need and a post-graduate course should also be provided. It is a matter of common knowledge that specialization in this department of medicine is confined to comparatively few of the medical profession. If any rapid progress is to be made either in the matter of surveys or in the examination and scientific study of mental deficiency there must be a large increase in the number of those who possess the requisite qualifications.

20. Special attention might well be given to the question of how far mental deficiency and feeble-mindedness, as now understood, might afford a defence in criminal trials. I have dealt with this in a section of this report and commend it to the attention of those who may be in a position to deal with it. It needs to be considered, as it must inevitably come up, sooner or later, in the courts.

Social Background

*Why Community Organization?

A Statement of a Need, and Some Suggestions for Meeting It

BY JOHN COLLIER,

President of the National Community Centre Association.

MR. Chairman, Ladies and Gentlemen: In my brief time I want to suggest first why the Cincinnati Social Unit is of national importance, then to refer briefly to some details of it as I have seen it.

The whole country is looking for leadership and initiative in the field of community organization. What even five years ago was thought to be rather an esoteric topic—community organization—is now preoccupying hard-headed people all over America. So that when President Wilson, about sixteen months ago, stated that he thought that community councils, then only types of experimental community organization, would, if fully developed, weld the nation together, as no other force would weld the nation together, would weld it together as no nation of great size had ever been welded before, these words of the President were not taken as rhetoric, but as deliberate and moderate words.

A DOMINANT ISSUE.

Why is community organization a dominant issue in America to-day? Within three weeks of each other, some four months ago, one of our great bank presidents, and the President of the United States, and the representatives of the great Railway Brotherhoods, made independently this statement, that in America the conflict between organized capital and organized labor had reached a deadlock; that as fast as wages increased costs increased faster; that the adjustment of industrial disputes was a beginning, not an end; that the real American problem was not wages, or even hours, but "real wages,"—what we call "the reduction of living costs." Frank Vanderlip, President Wilson and the Railway Brotherhoods coincided in that statement.

*Speech delivered Thursday evening, October 23, 1919, National Social Unit Conference.

At Washington to-day we are facing the grim deadlock of uncompromising organized capital and uncompromising organized labour, and the nation is hands up. Somehow it appears that the real wage must be increased. There must be found some other way besides beating wages up or down. Community organization is needed to increase the real wage.

Now, that is a perfectly specific proposition. To be concrete, in any American city to-day you will find that through lack of organization in the dental service of that American city, the people are paying unnecessarily high prices for dental work which in many instances had better not be done at all. We found among the unionized girls of the garment trades of New York, earning on an average less than five hundred dollars a year, those who were spending as much as fifty dollars a year on dental work of an injurious rather than a helpful kind. It is purely a matter of community organization to make scientific dental service available at incredibly low prices to all the people without either adding to the tax budget or calling on philanthropy to make up a deficit.

Passing from the matter of health service to the matter of housing conditions, and to the supreme matter of entertainment in the life of people during their leisure, you will find that community organization will increase the power of the dollar, and not increase it two or five or twenty per cent., but hundreds per cent. I am not stating an economic notion at all, but a fact that could be illustrated, not from European experience only, but from American communities, rural and urban. But, to secure these various types of organization which are evolutionary rather than revolutionary, which are salvation through co-operation rather than through combat, we must have organization within limited areas, organization among the consumers of health service, and pleasure service, and housing service, and organization of all of the administrations of public and private welfare agencies.

We need community organization to increase the real wage in order that the unhappy fever of unrest which the American people are now feeling may cease. We need community organization in order that we may turn this fever into a forward-looking disposition to get somewhere. We need the increase of the real wage in order to prolong life and decrease unhappiness. In brief, it is the fundamental problem to increase the real wage, and we need community organization for that purpose.

A RETURN OF INDIVIDUAL RESPONSIBILITY IS NECESSARY.

I think the other reason why all over America it is being recognized that community organization must come is this: our lives are becoming so complicated, the units through which we work are so huge—corporations that span the continent, governmental systems that deal in millions of human units and hundred of millions of dollars in highly segregated public budgets—life has become integrated on so vast a scale, that each individual is nothing as against that enormous impersonal organization. Under these conditions, where I, the citizen, am not needed and can do nothing, sooner or later I develop toward the social order either a pessimism, or a cynicism, or a hatred. Unless we can somehow bring the average man into a warm and potent relation with business and with government, then we are going to have progressively a state of mind here in free America like that which we call Bolshevism. We are not going to have that state of mind among the disinherited, we are going to have it among the well-to-do, that state of mind of cynicism and of kicking, and always voting against somebody, and never for anybody or anything—destructive Bolshevism.

Something in America must be done to make democracy a living, everyday, homely reality, and unless we can do it, there is a real danger that our whole parliamentary system will have to be scrapped, that our whole so-called constitutional order may be kicked over by the people. Community organization is a means of bringing the citizen into an intelligent and potent relation with business and with government.

CINCINNATI AS A LABORATORY.

Now, if Cincinnati is the theatre, the laboratory, where an experiment is being carried out that may show how to get community organization, then Cincinnati is doing a momentous service for the American Commonwealth, for the American people. I believe that Cincinnati is one of the three or four indispensable laboratories of community organization at this time. This is why I think so: All over America we have neighbourhood organization, groups of people getting together, talking about things, and others doing things. But in Cincinnati you have a sustained, carefully measured, I may say, a deeply imagined effort and plan to organize the city, the agencies, departments of government, the occupations, to so organize them in relation to the local neighbourhood life that when the individual citizen becomes conscious of his citizenship there is a

line of service ready for him to carry out. If he feels a need, he can either get the need met or can learn quietly and thoroughly why the need cannot be met.

Cincinnati is a place where through the Social Unit is being organized the structural, institutional part of our democratic life in such a way that the people can understand it, and use it, and love it, and therefore conserve it. No other effort in community organization has been carried out with a more sustained attention to the conserving of governmental and institutional values than has the Cincinnati Social Unit. In the right sense, the work of the Cincinnati Social Unit appears to me as the most significantly conservative piece of community work going on in America, as that type of community work which will bring about a gradual modernization of industry and government without violent fractures, without civil wars, without combines of hate, the kind of community organization that will make possible the carrying over into the Twentieth Century the moral and human liberalism of our Anglo-Saxon past.

My time is almost up, and I will have to speak briefly about the block organization. We have this picture of the Social Unit, wherein the doctors as a group, and the social workers as a group, and the clergymen as a group, and the teachers as a group, organize to talk about their technical problems and to do team work in the more efficient carrying out of their specialized vocations, and all that organization of experts and groups is focussed down toward this tiny ultimate unit of the block. And we see the block worker, whose office it is to bring each individual, even the children, into a vital relation with that whole social structure of the experts and the institutions.

It seems to me that the block worker and the block system are important elements in the community organization plan, but that they are only a part of the neighbourhood organization plan as it must develop. We must look not only to that intensive organization wherein the social order reaches down through a block worker and touches every living soul in the area, but we must look for an organization of the laity, of the plain people, you and me, living in neighbourhoods, or perhaps not living near in the same neighbourhood, meeting in forums and talking over our troubles and problems, and talking them over in some degree of fervour, and polemical violence, if you will, and reaching out for the expert knowledge that can illumine the problems, or offering to the expert that deeply human thing that comes out of masses of people when they hold to-

gether long enough to discover their common interest. The thing which comes out of the mass, which Abraham Lincoln and Thomas Jefferson felt to be a thing divine; the thing that comes out of the mass when it earnestly assembles to solve its problems together, somehow goes on beyond the headwork of the wisest social engineer. So Rousseau and Jefferson and Lincoln believed that the people in the long run were wiser in the mass than the wisest person. We need that element, and it is my impression that the element of mass assembly needs to be more rapidly and more courageously developed in Cincinnati than it has yet been done, and it can be done by the block organization, the organization of the neighbourhoods. You can have in Cincinnati a forum, an organization which will be a forum, constructive and orderly beyond the forums of any other city in America.

Since my time is up, I will have to stop, yet I simply have to say this. From the time the plan was first conceived I have known those who first thought of it. For years I was a skeptic about the practicability of the Social Unit plan. I saw the earnestness of those people who were in it. I appreciated the unusual sincerity and fine human nature of the group who were promoting the idea, but I was a skeptic as to its applicability here and now. Slowly, against my own mental reservations, I have come—I have been driven by the evidence of what I have seen, by what I have heard in your talks, by what I have seen in your statistical tables and in you case records; I have been brought, against my will, if you like, to consider that the Social Unit is one of the two or three momentous experiments in democracy going on in America.



The Provincial Board of Health of Ontario

Special Treatment Clinics for Venereal Diseases

IT is the intention of the Provincial Board of Health to assist local Boards of Health to establish special clinics for the treatment of venereal diseases. The Board feels that the choice of a site for the special clinic or clinics in the various municipalities should be left to a certain extent in the hands of the local authorities who understand local conditions. The Board would suggest, however, that where facilities already exist, as in the case of hospitals, etc., other things being equal, these facilities should be used. The Board will afford the following assistance to each clinic established:—

- (1) For the purchase of furnishings and apparatus for a special clinic, \$1,000.
(It is thought that the cost of the apparatus and furnishings, as per schedule A, will not exceed this amount.)
Where a clinic is already in existence and up to the standard (see schedule (a) the same financial assistance will be given.
- (2) For each out patient treatment for gonorrhoea 50c.
For each out patient treatment for syphilis 50c.
(No more than one treatment each day will be paid for.)
For each out patient treatment for syphilis in addition, free "salvarsan" will be provided—as soon as the Board is in a position to furnish its own product.
- (3) In the case of patients treated in the hospitals the sum of 25c. in addition to the foregoing grants will be paid to the hospital for each day of indoor treatment up to three months, at the end of which time the indoor grant will cease.
- (4) The sum of \$500 towards the maintenance of a Social Worker.
- (5) Standard record forms for the use of these special clinics will be supplied by the Board.

In return for this assistance the Board will require that the clinic will be kept up to a certain standard as follows:—

- (1) The special clinic shall be for the treatment of Venereal diseases.
- (2) The apparatus and furnishings for the clinic shall be as follows:— (See schedule (a).)
- (3) The personnel of the clinic shall be:—
 - (a) One specialist in venereal diseases who shall be appointed by the hospital if the clinic is in connection with a hospital and by the local Board of Health in other cases. This officer must also be satisfactory to the Provincial Board.
 - (b) Such medical assistants as may be necessary shall be appointed on the same basis.
 - (c) One full time social worker who shall be a graduate nurse.
 - (d) One clerk, if the clinic is treating more than forty cases per week.
 - (e) One male orderly.
 - (f) If possible, one undergraduate nurse to assist in the clinic.
- (4) All treatment in the clinic shall be free.
- (5) At least one night and two day clinics shall be held per week. (This may be modified on agreement.)
- (6) Separate hours shall be set aside for men and women in the clinic; also, if possible, separate hours for the treatment of gonorrhoea and syphilis.
- (7) Weekly reports will be required on forms supplied by the Board.
- (8) The clinic including its records, apparatus, method of treatment, etc., shall be open to inspection by the Board.
- (9) The municipality will be expected to advance an amount for upkeep of the clinic or clinics which shall be approximately equal to the amount advanced by the Board. (See section 14, sub-secs. 1 and 2, Venereal Diseases Prevention Act.)
- (10) The social service nurse shall follow up cases outside the clinic to see that all patients continue treatment and also that any possible contacts are examined.
- (11) Accounts should be rendered at the end of the month and will be paid on the Board's certificate.
- (12) The Board reserves the right to modify these rules if such should, in the interest of the clinic, be deemed necessary.

Local Boards of Health and hospitals desiring to take advantage of this offer are requested to make application to the Provincial Board of Health, Parliament Buildings, Toronto.

Cases and Deaths from Communicable Diseases reported by Local
 Boards of Health for the Four Weeks Ending
 January 24th, 1920

Diseases.	Jan., 1920		Jan., 1919	
	cases	deaths	cases	deaths.
Small-pox	1,188	6	40	0
Scarlet Fever	642	21	206	4
Diphtheria	636	70	294	25
Measels	1,296	16	5	0
Whooping Cough	162	19	56	6
Typhoid Fever	42	12	11	2
Tuberculosis	145	135	186	156
Infantile Paralysis	2	0	—	—
Cerebro-spinal Meningitis	8	7	4	4
Influenza Pneumonia	15	9	—	—
Influenza	654	15	Influenza and Pneumonia	1,514
Acute Primary Pneumonia	297	—	—	—
	4,790	607	802	1,711

VENEREAL DISEASES REPORTED BY MEDICAL OFFICERS OF HEALTH.

	Jan., 1920	Jan., 1919
	cases	cases
Syphilis	112	125
Gonorrhoea	94	138
Chancroid	3	1
	209	264

The reports of Local Boards of Health for four weeks ending January 24th show a decrease in small-pox cases of 245 in the Province, compared with December last, when there were 1,443 cases reported. Of the 1,188 cases reported for January, Toronto contributed 649, while the rest of the Province had 539. Diphtheria, which has been prevalent for the last three months, shows a decrease of 108 cases, while Scarlet Fever returns give an increase of 88 cases, 4 deaths. The cities reporting the greatest number of cases are as follows:—

	Diphtheria.		Scarlet Fever	
	cases	deaths	cases	deaths.
Toronto	251	23	191	2
Hamilton	63	4	82	3
Ottawa	32	1	37	3
St. Catharines	27	3	2	0
St. Thomas	9	0	2	0
London	29	7	10	0
Kingston	6	0	11	3
Fort William	2	0	25	0

The epidemic of Influenza that has prevailed in many of the American cities has not as yet invaded the Province to any extent, with the exception of one city that reports 600 cases. The other 54 cases reported are rather more sporadic than epidemic being scattered over 15 Municipalities.

An epidemic of Measles prevails in the City of Ottawa, where 840 cases have been reported out of 1,300 for the whole Province, but the case mortality is small compared with that of Whooping Cough as may be seen in the comparative table.

Encephalitis Lethargica (sleeping sickness) caused 8 deaths out of 18 cases, but no epidemic appears to exist as the cases were spread over 17 municipalities. The cases and deaths are as follows:—

	Cases	Deaths
Ottawa	1	1
St. Thomas	1	1
Yarmouth Township	2	2
Goderich	1	0
Tuckersmith	1	1
Hullett	1	0
Oxford	1	0
Tilbury East	1	0
Adolphustown	1	0
London Township	1	1
Woodstock	1	0
East Oxford	1	0
Listowel	1	0
East Hawkesbury	1	1
Picton	1	0
McNab Township	1	1
Iroquois	1	0
	—	—
	18	8

News Items

Dr. J. A. Doull, D.P.H., who has recently returned from overseas service, has been appointed Provincial Inspector of Health for Nova Scotia, under Dr. W. H. Hattie, Provincial Health Officer.

Dr. Allan C. Rankin, Director of Laboratories of the Provincial Department of Health, Alberta, has been made Dean of the Medical Faculty of the University of Alberta, Edmonton South.

Dr. J. J. Ower has been appointed Professor of Pathology in the Medical Faculty of the University of Alberta.

A very interesting open meeting of the Canadian National Committee for Mental Hygiene was held at the home of Mrs. H. D. Warren, in Toronto, on January 29th. Amongst those who addressed the meeting were: Dr. John A. Amyot, Deputy Minister, Federal Department of Health, Ottawa; Dr. J. D. Pagé, Quebec; Dr. Desloges, Montreal; Sir James Burn, Ottawa; Mr. David Dunlap, Toronto; Dr. C. K. Clarke and Dr. Clarence M. Hincks, of the "National Committee," and Dr. Colin Russell, of Montreal. Dr. Charles Martin, of Montreal, acted as Chairman of the meeting which was attended by a very large and representative audience.

A well attended meeting of the Child Welfare Section of the Canadian Public Health Association was held in the Hospital for Sick Children, Toronto, on January 31st last. Dr. Lionel Lindsey, of Montreal, Chairman of the Section, was in attendance, and Miss Mary Power, of the Bureau of Child Welfare of the Provincial Board of Health, Ontario, the energetic Secretary of the Section, outlined the work that the Section has done since the annual meeting in May, 1919. An active campaign in this extremely important field of Public Health work is to be launched at once. Dr. Alan Brown of Toronto, Dr. Lionel Lindsey of Montreal, Dr. George Smith of Toronto, and the Secretary of the Section are to prepare a draft scheme for further consideration of the Section at an early date. Co-ordination of all Child Welfare work, Federal, Provincial and Municipal; official and voluntary, is to be attempted by the Section.

The Canadian Red Cross Society has adopted as its peace-time programme the "Prevention of Sickness, the Control of Disease and the Mitigation of Suffering." Co-ordination of the efforts of all national voluntary health promoting agencies will probably be attempted, and close affiliation with official, governmental agencies sought.

Dr. A. C. Jost has been appointed Divisional Medical Officer of Health, Eastern Health Division, Nova Scotia, under Dr. W. H. Hattie, Provincial Health Officer.

Dr. Chester P. Brown, D.P.H., has received an appointment in the Dominion Government Quarantine Service, under the Federal Department of Health, and has been assigned to duty at the Quarantine Station at St. John, New Brunswick.

Miss Mary Power, Director of the Bureau of Child Welfare of the Provincial Board of Health, Ontario, gave one of the most interesting addresses of those presented to the recent Congress of the Social Service Council of Canada, in Montreal.

The Public Health and Medical Congress to be held in Vancouver in June next is to be one of the most important gatherings of the sort ever undertaken in Canada. All interested in the problems of public health and social welfare generally should plan to attend the meeting.

The PUBLIC HEALTH JOURNAL has at its disposal a limited number of copies of Mr. Justice Hodgins' report on Venereal Diseases. Any interested subscriber may procure one by applying to the editor of the JOURNAL.

It is fully expected that a license to manufacture "salvarsan" will be given to the Provincial Board of Health of Ontario by the Dominion Government within the next few days. At a conference between the Hon. Sir George E. Foster, Minister of Trade and Commerce, and Dr. J. W. S. McCullough, Chief Officer of Health for Ontario, in Ottawa on February 7th, this was finally decided. The Board will in consequence be able to supply salvarsan free, or at least at very reduced prices to all hospitals and Government institutions within the next couple of months. The Board will also have power to sell to the other provinces of Canada for their hospitals and institutions.

Editorial

THE CAMPAIGN AGAINST VENEREAL DISEASES.

IT is understood that the Dominion Government programme for the combating of Venereal Diseases in Canada is well under way. Distribution of the \$200,000 voted to the provinces some time ago has commenced, while plans are being worked out in the various provinces for the proper expenditure of this money and for the money which will be voted by the provinces themselves to supplement it. It is well that one should understand from the outset that the working out of a scheme for the successful combating of Venereal Diseases on a large scale is not a simple matter, and that it involves a good deal more than the mere establishment of clinics in the more populous centres. Each province must have its scheme carefully prepared beforehand, and it must be a comprehensive one if it is to be successful. It is important that a competent officer be established in each province to take charge of the provincial campaign—under the Chief Officer of Health, of course. Legislation exists in most of the provinces, but it is a question whether it is being well enforced in any of them. This raises the question of the desirability of appointing a Law Enforcement Officer to take charge of all law enforcement work pertaining not only to the working out of the Venereal Disease Prevention Acts in the various provinces, but also to similar work in connection with the prevention of prostitution, regulation of boarding houses, etc.

Clinics will be of little value unless they maintain a high standard and—not the least important question—unless they are patronized. Propaganda work must be carried on on a fairly large scale if the tremendous number of cases which up to the present time have remained untreated are to be persuaded to take treatment, and if doctors throughout the country are to be made to realize that it is important that they should report their cases.

The Canadian National Council for Combating Venereal Diseases has a number of committees at work on various phases of the propaganda part of the problem, and we hope for results in the near future. It is expected that the Provincial Committees of the National Council will do their part and that within the next few months the people of Canada will come to know Venereal Diseases not only as a serious public health problem, but as a problem capable of solution. THE PUBLIC HEALTH JOURNAL urges its readers in every province to do all in their power to help the Dominion-wide campaign against Venereal Diseases.

CHILD WELFARE.

THE February number of THE JOURNAL was largely devoted to matters relating to Child Hygiene, because there is no problem of more vital interest to the state than that of Child Welfare.

Official and voluntary agencies have begun to make plans to arouse the community to the necessity for concerted action along broad lines. These plans should make possible the correlation of the work of all voluntary bodies endeavouring to do Child Welfare work.

The Federal and Provincial Department of Health acting in conjunction with the Child Welfare Section of the Canadian Public Health Association should formulate a scheme which would provide ample scope for official and voluntary action carried on by all Health Departments, Federal, Provincial and Municipal, and their valuable auxiliaries, all the voluntary agencies in this field.

Concretely, there should be established prenatal clinics in all communities; Well Baby Clinics also should be provided; not only in cities, but in all rural districts as well. Provision for Medical Inspection of School Children and a Public Health Nursing Service in schools in every district in Canada should be one of the first objectives.

Voluntary organizations can arouse public opinion and make it certain that health officers, who apply for appropriations to pay for such services, will have their requests complied with. Let us first, then, arouse the public. The fact that there were 6,402 deaths in children under one year of age in Ontario, in 1918, amongst a total of 64,729 living births and 2,400 still-births during the same period, is sufficient argument in favour of *immediate* action in Ontario!

BOOK REVIEW.

Industrial Medicine and Surgery, by Henry E. Mock, M.D., F.A.C.S., Assistant Professor of Industrial Medicine and Surgery at Rush Medical College. Octavo volume of 846 pages with 210 illustrations. Philadelphia and London: W. B. Saunders Company, 1919. Cloth, \$10.00 net.

This book by Dr. Henry E. Mock, who, in addition to his other qualifications, is Chief Surgeon to Sears, Roebuck Co., Chicago, is full of the most valuable sort of information on matters pertaining

to this new specialty dealing with human maintenance in industry. To the veriest tyro in public health a perusal of its pages must prove an inspiration, while for the industrial physician or surgeon, the public health expert, the manufacturer of vision or the labor leader alike it contains an immense amount of practical information on all aspects of the health problem in industry which is of real value. Industrial hygiene is a comparatively new field. It is one of the most important fields in modern preventive medicine and a field the possibilities of which must appeal to everyone. Dr. Mock is evidently not only an expert but an enthusiast in his chosen work, and this very valuable volume provides the best evidence of that fact. The book is written in the most convincing and interesting style, and is very well worth reading. It is divided into six sections dealing with the subjects of: Industrial Health Service, Prevention, Industrial Medicine, Industrial Surgery, Compensation, Insurance, Medical Phases and Reconstruction. Each of these is discussed with a thoroughness and care which is beyond criticism. Great emphasis is placed on the preventive aspects of the question. It is shown very clearly what a tremendous advance has been made since the day when the industrial physician or surgeon was looked on by his fellows as almost a physician who had lost caste.

Considerable emphasis is placed on the matter of recreation and exercise as related to supervision of the health of employees, food, accident, prevention, women in industry, employees' compensation and health insurance, while, of course, the more obvious subjects, such as: First aid, emergency surgery, etc., are not neglected. Illustrations and charts dealing with both the medical and social aspects of industrial hygiene are generously provided.

I can recommend this text-book to readers of the PUBLIC HEALTH JOURNAL as one of the most valuable in this field which has yet been published.

G. B.

